

CLAIMS.

WHAT IS CLAIMED:

1. A method for separating a soluble polymer resin from a solution slurry, which contains a solid phase of said polymer resin as particulates, said method comprising:

adding to a solution slurry which contains at least one soluble polymer resin and a solid phase of said polymer resin as particulates, a linear or chain-branched polymeric precipitation aid which absorbs onto the surface of the polymer resin particulates in said solution slurry, wherein said precipitation aid is a suitable blend component for formulations of said polymer resin; and

adding the solution slurry, which contains said precipitation aid, to a non-solvent for the soluble polymer resin to precipitate the soluble polymer resin within said solution slurry.

2. A method as in claim 1 comprising the additional step of recovering the precipitate from said solution slurry.

3. A method as in claim 2, wherein the precipitate is recovered from said solution slurry by filtration through a filter having a pore size greater than 100 microns.

4. A method as in claim 2, wherein over 90% of the total polymer resin in said solution slurry, including the soluble polymer resin and the solid phase polymer resin, is recovered as particles of a size greater than 100 microns.

5. A method as in claim 1, wherein the soluble polymer resin in said solution slurry is selected from the group consisting of polycarbonates, polystyrenes, rubber modified polystyrenes, polyphenylene ethers, polyetherimides, polyamides, and polyesters.

6. A method as in claim 1, wherein the soluble polymer resin within the solution slurry is a polyphenylene ether resin.

7. A method as in claim 1, wherein the soluble polymer resin within said solution slurry is a copolymer of 2,6-xylenol and 2,3,6-trimethylphenol and the solution slurry is a reaction medium of a solution polymerization process in which said copolymer has been produced.

8. A method as in claim 1, which comprises the additional step of concentrating said solution slurry after the addition of said precipitation aid to achieve a concentration of soluble polymer resin above 10%, based on the total weight of said solution slurry.

9. A method as in claim 8, wherein said solution slurry is concentrated by heating to a temperature above 50°C, optionally with the application of vacuum.

10. A method as in claim 6, wherein the precipitation aid is selected from the group consisting of polyesters, polystyrenes, polyamides, and impact modifiers.

11. A method as in claim 10, wherein the impact modifier is selected from the group consisting of natural rubbers, synthetic rubbers and thermoplastic elastomers selected from the group consisting of olefin homopolymers, olefin copolymers, styrene homopolymers, styrene copolymers, homopolymers of conjugated dienes, copolymers of conjugated dienes, homopolymers of vinyl carboxylic acids, copolymers of vinyl carboxylic acids, homopolymers of derivatives of vinyl carboxylic acids and copolymers of derivatives of vinyl carboxylic acids.

12. A method as in claim 11, wherein the olefin copolymers comprise EPDM copolymers, the conjugated diene homopolymers comprise polybutadiene and the styrene copolymers include AB, (AB)-R and ABA block copolymers.

13. A method as in claim 12, wherein the styrene block copolymers comprise styrene-butadiene-styrene block copolymers,

styrene-ethylene-butylene-styrene block copolymers,

polystyrene-polyisoprene-polystyrene block copolymers,

hydrogenated polystyrene-polybutadiene-polystyrene block copolymers and

poly(alpha-methylstyrene)-polyisoprene-poly(alpha-methylstyrene) block copolymers.

14. A method as in claim 11, wherein the styrene copolymer is a styrene block copolymer.

15. A method as in claim 1, wherein the amount of precipitation aid added to said solution slurry falls within the range of 1 to 10 wt. %, based on the total weight of soluble polymer resin in said solution slurry.

16. A method for separating a soluble polyphenylene ether resin from a solution slurry, said method comprising:

adding to a solution slurry which contains at least one soluble polyphenylene ether resin and a solid phase of polyphenylene ether resin particulates, a linear or chain-branched polymeric precipitation aid which absorbs onto the surface of the polyphenylene ether particulates within said solution slurry, wherein said precipitation aid is a blend component for the final formulation of said polyphenylene ether resin;

adding the solution slurry, which contains the precipitation aid, to a non-solvent for the soluble polyphenylene ether resin so as to precipitate said soluble polyphenylene ether resin in said solution slurry.

17. A method as in claim 16, comprising the additional step of recovering the precipitate from said solution slurry.

18. A method as in claim 16, wherein the precipitate is recovered from said solution slurry by filtration through a filter having a pore size greater than 100 microns.

19. A method as in claim 16, wherein over 90% of the total polyphenylene ether resin in said solution slurry, including the soluble polyphenylene ether polymer resin and the solid polyphenylene phase polymer resin, is recovered as particles of a size greater than 100 microns.

20. A method as in claim 16, wherein the polyphenylene ether resin within said solution slurry is a copolymer of 2,6-dimethylphenol and 2,3,6-trimethylphenol

and the solution slurry is a reaction medium of a solution polymerization process which produces said copolymer.

21. A method as in claim 16, which comprises the additional step of concentrating said solution slurry after the addition of said precipitation aid to achieve a concentration of soluble polymer resin above 25%, based on the total weight of said solution slurry.

22. A method as in claim 16, wherein said solution slurry is concentrated by heating to a temperature above 50°C, optionally with the application of vacuum.

23. A method as in claim 16, wherein the precipitation aid is selected from the group consisting of impact modifiers.

24. A method as in claim 23, wherein the impact modifier is selected from the group consisting of thermoplastic elastomers selected from the group consisting of olefin homopolymers, olefin copolymers, styrene homopolymers, styrene copolymers, homopolymers of conjugated dienes and copolymers of conjugated dienes.

25. A method as in claim 16, wherein the olefin copolymers comprise EPDM copolymers, the conjugated diene homopolymers comprise polybutadiene and the styrene copolymers comprise styrene block copolymers.

26. A method as in claim 16, wherein the styrene block copolymers comprise styrene-butadiene-styrene block copolymers, styrene-ethylene-butylene-styrene block copolymers, polystyrene-polyisoprene-polystyrene block copolymers, hydrogenated polystyrene-polybutadiene-polystyrene block copolymers and poly(alpha-methylstyrene)-polyisoprene-poly(alpha-methylstyrene) copolymers.

27. A method as in claim 16, wherein the amount of precipitation aid added to said solution slurry falls within the range of 1 to 10 wt. %, based on the total weight of soluble polyphenylene ether polymer resin in said solution slurry.